

**AMENDMENT IN THE NATURE OF A SUBSTITUTE  
TO H.R. 3130  
OFFERED BY MR. BOEHLERT (FOR HIMSELF, MR.  
LARSON OF CONNECTICUT, MR. SMITH OF  
MICHIGAN, AND MS. EDDIE BERNICE JOHN-  
SON OF TEXAS)**

Strike all after the enacting clause and insert the  
following:

**1 SECTION 1. SHORT TITLE.**

2       This Act may be cited as the “Undergraduate  
3 Science, Mathematics, Engineering, and Technology Edu-  
4 cation Improvement Act”.

**5 SEC. 2. FINDINGS.**

6       The Congress makes the following findings:

7           (1) Studies show that about half of all United  
8 States post-World War II economic growth is a di-  
9 rect result of technological innovation, and science,  
10 engineering, and technology play a central role in  
11 the creation of new goods and services, new jobs,  
12 and new capital.

13          (2) The growth in the number of jobs requiring  
14 technical skills is projected to be more than 50 per-  
15 cent over the next decade.

1           (3) A workforce that is highly trained in  
2 science, mathematics, engineering, and technology is  
3 crucial to generating the innovation that drives eco-  
4 nomic growth.

5           (4) Outside of the biomedical sciences, the num-  
6 ber of undergraduate degrees awarded in the  
7 science, mathematics, engineering, and technology  
8 disciplines has been flat or declining since 1987, de-  
9 spite rapid population growth and a significant in-  
10 crease in undergraduate enrollment over the same  
11 period.

12          (5) The demand for H-1B visas has increased  
13 over the past several years, suggesting that the  
14 United States is not training a sufficient number of  
15 scientists and engineers.

16          (6) International comparisons of 24-year olds  
17 have shown that the proportion of natural science  
18 and engineering degrees to the total of under-  
19 graduate degrees is lower in the United States than  
20 in Japan, South Korea, Taiwan, the United King-  
21 dom, and Canada.

22          (7) Technological and scientific advancements  
23 hold significant potential for elevating the quality of  
24 life and the standard of living in the United States.

1       The quality and quantity of such advancements are  
2       dependent on a technically trained workforce.

3           (8) Reversing the downward enrollment and  
4       graduation trends in a number of science and engi-  
5       neering disciplines is not only imperative to main-  
6       taining our Nation's prosperity, it is also important  
7       for our national security.

8           (9) The decline of student majors in science,  
9       mathematics, engineering, and technology is report-  
10      edly linked to poor teaching quality in these dis-  
11      ciplines and lack of institutional commitment to un-  
12      dergraduate education as compared to research.

13          (10) Undergraduate science, mathematics, engi-  
14      neering, and technology faculty generally lack any  
15      formal preparation for their role as undergraduate  
16      educators. In addition, faculty members are gen-  
17      erally not rewarded, and in some cases are penal-  
18      ized, for the time they devote to undergraduate edu-  
19      cation.

20          (11) Faculty experienced in working with un-  
21      dergraduate students report that undergraduate re-  
22      search experiences contribute significantly to a stu-  
23      dent's decision to stay in an undergraduate science,  
24      mathematics, engineering, or technology major and

1 to continue their education through graduate stud-  
2 ies.

3 **SEC. 3. DEFINITIONS**

4 In this Act—

5 (1) the term “academic unit” means a depart-  
6 ment, division, institute, school, college, or other  
7 subcomponent of an institution of higher education;

8 (2) the term “community college” has the  
9 meaning given such term in section 7501(4) of the  
10 Elementary and Secondary Education Act of 1965  
11 (20 U.S.C. 7601(4));

12 (3) the term “Director” means the Director of  
13 the National Science Foundation;

14 (4) the term “eligible nonprofit organization”  
15 means a nonprofit research institute or a nonprofit  
16 professional association with demonstrated experi-  
17 ence delivering science, mathematics, engineering, or  
18 technology education, as determined by the Director;

19 (5) the term “institution of higher education”  
20 has the meaning given such term in section 101(a)  
21 of the Higher Education Act of 1965 (20 U.S.C.  
22 1001(a)); and

23 (6) the term “research-grade instrumentation”  
24 means a single instrument or a networked system of

1 instruments that enable publication-quality research  
2 to be performed by students or faculty.

3 **SEC. 4. TECHNOLOGY TALENT.**

4 (a) SHORT TITLE.—This section may be cited as the  
5 “Technology Talent Act of 2002”.

6 (b) GRANT PROGRAM.—

7 (1) IN GENERAL.—The Director is authorized  
8 to award grants, on a competitive, merit-reviewed  
9 basis, to institutions of higher education with phys-  
10 ical or information science, mathematics, engineer-  
11 ing, or technology programs for the purpose of in-  
12 creasing the number and quality of students study-  
13 ing and receiving associate or baccalaureate degrees  
14 in the physical and information sciences, mathe-  
15 matics, engineering, and technology. An institution  
16 of higher education that is awarded a grant under  
17 this section shall be known as a “National Science  
18 Foundation Science and Engineering Talent Expan-  
19 sion Center”.

20 (2) REQUIREMENTS.—

21 (A) NUMBER.—The Director shall award  
22 not fewer than 10 grants under this section  
23 each year, contingent upon available funds.

24 (B) DURATION.—Grants under this section  
25 shall be awarded for a period of 5 years, with

1 the final 2 years of funding contingent on the  
2 Director's determination that satisfactory  
3 progress has been made by the grantee during  
4 the first 3 years of the grant period toward  
5 achieving the increases in the number of stu-  
6 dents proposed pursuant to subparagraph (E).

7 (C) PRINCIPAL INVESTIGATOR.—At least 1  
8 principal investigator for each grant awarded  
9 under this section must be in a position of ad-  
10 ministrative leadership at the institution of  
11 higher education, and at least 1 principal inves-  
12 tigator must be a faculty member from an aca-  
13 demic department included in the work of the  
14 project.

15 (D) SUBSEQUENT GRANTS.—An institution  
16 of higher education that has completed a grant  
17 awarded under this section may apply for a  
18 subsequent grant under this section.

19 (E) INCREASES.—

20 (i) INSTITUTIONS OF HIGHER EDU-  
21 CATION WITH BACCALAUREATE DEGREE  
22 PROGRAMS.—An institution of higher edu-  
23 cation that awards baccalaureate degrees  
24 and desires to receive a grant under this  
25 section shall propose in its application spe-

1           cific increases in the number of students  
2           who are United States citizens or perma-  
3           nent resident aliens obtaining bacca-  
4           laureate degrees at the institution within  
5           the physical or information sciences, math-  
6           ematics, engineering, or technology, and  
7           shall state the mechanisms by which the  
8           success of the grant project shall be as-  
9           sessed.

10           (ii) COMMUNITY COLLEGES.—A com-  
11           munity college that desires to receive a  
12           grant under this section shall propose in  
13           its application specific increases in the  
14           number of students who are United States  
15           citizens or permanent resident aliens pur-  
16           suing degrees, concentrations, or certifi-  
17           cations in the physical or information  
18           sciences, mathematics, engineering, or  
19           technology programs or pursuing credits  
20           toward transfer to a baccalaureate degree  
21           program in the physical or information  
22           sciences, mathematics, engineering, or  
23           technology, and shall state the mechanisms  
24           by which the success of the grant project  
25           shall be assessed.

1 (F) RECORDKEEPING.—Grantee institu-  
2 tions shall maintain, and transmit annually to  
3 the National Science Foundation, in a format  
4 indicated by the Director, baseline and subse-  
5 quent data on undergraduate students in phys-  
6 ical and information science, mathematics, engi-  
7 neering, and technology programs. Such data  
8 shall include information on—

9 (i) the number of students enrolled;

10 (ii) student academic performance, in-  
11 cluding quantifiable measurements of stu-  
12 dents' mastery of content and skills;

13 (iii) persistence to degree completion,  
14 including students who transfer from  
15 science, mathematics, engineering, and  
16 technology programs to programs in other  
17 academic disciplines; and

18 (iv) placement during the first year  
19 after degree completion in post-graduate  
20 education or career pathways.

21 (G) PRIORITY.—The Director may give  
22 priority in awarding grants under this section  
23 to institutions of higher education whose  
24 application—



1 (i) indicates a plan to build on pre-  
2 vious and existing efforts with dem-  
3 onstrated success, including efforts involv-  
4 ing industry, in improving undergraduate  
5 learning and teaching, including efforts  
6 funded by Federal grants from the Na-  
7 tional Science Foundation or other agen-  
8 cies; and

9 (ii) provides evidence of a commitment  
10 by the institution's administration to sup-  
11 port and reward faculty involvement in  
12 carrying out the proposed implementation  
13 plan for the project.

14 (c) USES OF FUNDS.—Activities supported by grants  
15 under this section may include—

16 (1) projects that specifically aim to increase the  
17 number of traditionally underrepresented students in  
18 the physical or information sciences, mathematics,  
19 engineering, or technology, such as mentoring pro-  
20 grams;

21 (2) projects that expand the capacity of institu-  
22 tions of higher education to incorporate current ad-  
23 vances in science and technology into the under-  
24 graduate learning environment;

1           (3) bridge projects that enable students at com-  
2           munity colleges to matriculate directly into bacca-  
3           laureate physical or information science, mathe-  
4           matics, engineering, or technology programs, includ-  
5           ing those targeted at traditionally underrepresented  
6           groups in such disciplines;

7           (4) projects including interdisciplinary ap-  
8           proaches to undergraduate physical and information  
9           science, mathematics, engineering, and technology  
10          education;

11          (5) projects that focus directly on the quality of  
12          student learning, including those that encourage—

13                (A) high-caliber teaching, including ena-  
14                bling faculty to spend additional time teaching  
15                participating students in smaller class settings,  
16                particularly in the laboratory environment, by,  
17                for example, providing summer salary or other  
18                additional salary for faculty members or sti-  
19                pends for students;

20                (B) opportunities to develop new peda-  
21                gogical approaches including the development of  
22                web-based course strategies, distributed and col-  
23                laborative digital teaching tools, or interactive  
24                course modules; and

1 (C) screening and training of teaching as-  
2 sistants;

3 (6) projects that—

4 (A) facilitate student exposure to potential  
5 careers, including cooperative projects with in-  
6 dustry or government that place students in in-  
7 ternships as early as the summer following their  
8 first year of study;

9 (B) provide part-time employment in in-  
10 dustry during the school year; or

11 (C) provide opportunities for undergradu-  
12 ates to participate in industry or government  
13 sponsored research;

14 (7) projects that assist institutions of higher  
15 education in States that participate in the Experi-  
16 mental Program to Stimulate Competitive Research  
17 (EPSCoR) to broaden the science, engineering,  
18 mathematics, and technology student base or in-  
19 crease retention in these fields;

20 (8) projects to encourage undergraduate re-  
21 search on-campus or off-campus;

22 (9) projects that provide financial incentives to  
23 students entering and persisting in the study of  
24 science, mathematics, engineering, or technology;

1           (10) projects that leverage the Federal invest-  
2           ment by providing matching funds from industry,  
3           from State or local government sources, or from pri-  
4           vate sources; and

5           (11) other innovative approaches to achieving  
6           the purpose described in subsection (b)(1).

7           (d) ASSESSMENT, EVALUATION, AND DISSEMINATION  
8           OF INFORMATION.—

9           (1) PROJECT ASSESSMENT.—The Director shall  
10          require each recipient of a grant awarded under this  
11          section to implement project-based assessment that  
12          facilitates program evaluation under paragraph (2)  
13          and that assesses the impact of the project on  
14          achieving the purpose stated in subsection (b)(1), as  
15          well as on institutional policies and practices.

16          (2) PROGRAM EVALUATION.—Not later than  
17          180 days after the date of the enactment of this Act,  
18          the Director shall award at least 1 grant or contract  
19          to an independent evaluative organization to—

20                 (A) develop metrics for measuring the im-  
21                 pact of the program authorized under this sec-  
22                 tion on—

23                         (i) the number of students enrolled;

1 (ii) student academic performance, in-  
2 cluding quantifiable measurements of stu-  
3 dents' mastery of content and skills;

4 (iii) persistence to degree completion,  
5 including students who transfer from  
6 science, mathematics, engineering, and  
7 technology programs to programs in other  
8 academic disciplines; and

9 (iv) placement during the first year  
10 after degree completion in post-graduate  
11 education or career pathways; and

12 (B) conduct an evaluation of the impacts  
13 of the program described in subparagraph (A),  
14 including a comparison of the funded projects  
15 to identify best practices with respect to achiev-  
16 ing the purpose stated in subsection (b)(1).

17 (3) DISSEMINATION OF INFORMATION.—The  
18 Director, at least once each year, shall disseminate  
19 information on the activities and the results of the  
20 projects assisted under this section, including best  
21 practices identified pursuant to paragraph (2)(B), to  
22 participating institutions of higher education and  
23 other interested institutions of higher education.

24 (e) REPORTS.—

1           (1) LIST.—Not later than 90 days after the  
2           date of the enactment of this Act, the Director shall  
3           develop, and disseminate to institutions of higher  
4           education, a list of examples of existing institutional  
5           and government efforts relevant to the purpose stat-  
6           ed in subsection (b)(1).

7           (2) INTERIM PROGRESS REPORT.—At the end  
8           of the third year of the program authorized under  
9           this section, the Director shall transmit to the Con-  
10          gress an interim progress report of the evaluation  
11          conducted under subsection (d)(2).

12          (3) FINAL REPORT.—Not later than 6 years  
13          after the date of the enactment of this Act, the Di-  
14          rector shall transmit to the Congress a final report  
15          of the evaluation conducted under subsection (d)(2).

16          (f) ADVISORY COMMITTEE.—

17                (1) ESTABLISHMENT.—The Director shall es-  
18                tablish an advisory committee, that includes signifi-  
19                cant representation from industry and academic  
20                leaders, for the grant program authorized under this  
21                section. The advisory committee shall—

22                    (A) assist the Director in securing active  
23                    industry, and State and local government, par-  
24                    ticipation in the program;

1 (B) recommend to the Director innovative  
2 approaches to achieving the purpose stated in  
3 subsection (b)(1); and

4 (C) advise the Director regarding program  
5 metrics, implementation and performance of the  
6 program, and program progress reports.

7 (2) DURATION.—Section 14 of the Federal Ad-  
8 visory Committee Act shall not apply to the advisory  
9 committee established under this subsection.

10 (g) AUTHORIZATION OF APPROPRIATIONS.—There  
11 are authorized to be appropriated to the National Science  
12 Foundation to carry out this section—

13 (1) \$25,000,000 for fiscal year 2003; and

14 (2) such sums as may be necessary thereafter.

15 (h) RELATED PROGRAMS.—The Director shall give  
16 consideration to achieving the purpose stated in subsection  
17 (b)(1) by awarding grants to institutions participating in  
18 the Louis Stokes Alliances for Minority Participation.

19 **SEC. 5. INSTITUTIONAL REFORM.**

20 (a) IN GENERAL.—The Director shall award grants,  
21 on a merit-reviewed, competitive basis, to institutions of  
22 higher education to expand previously implemented re-  
23 forms of undergraduate science, mathematics, engineer-  
24 ing, or technology education that have been demonstrated  
25 to have been successful in increasing the number and qual-

1 ity of students studying and receiving associate or bacca-  
2 laureate degrees in science, mathematics, engineering, or  
3 technology.

4 (b) USES OF FUNDS.—Activities supported by grants  
5 under this section may include—

6 (1) expansion of successful reform efforts be-  
7 yond a single course or group of courses to achieve  
8 reform within an entire academic unit;

9 (2) expansion of successful reform efforts be-  
10 yond a single academic unit to other science, mathe-  
11 matics, engineering, or technology academic units  
12 within an institution;

13 (3) creation of multidisciplinary courses or pro-  
14 grams that formalize collaborations for the purpose  
15 of improved student instruction and research in  
16 science, mathematics, engineering, and technology;

17 (4) expansion of undergraduate research oppor-  
18 tunities beyond a particular laboratory, course, or  
19 academic unit to engage multiple academic units in  
20 providing multidisciplinary research opportunities  
21 for undergraduate students;

22 (5) expansion of innovative tutoring or men-  
23 toring programs proven to enhance student recruit-  
24 ment or persistence to degree completion in science,  
25 mathematics, engineering, or technology;



1           (6) improvement of undergraduate science,  
2           mathematics, engineering, and technology education  
3           for nonmajors, including teacher education majors;  
4           and

5           (7) implementation of technology-driven reform  
6           efforts, including the installation of technology to fa-  
7           cilitate such reform, that directly impact under-  
8           graduate science, mathematics, engineering, or tech-  
9           nology instruction or research experiences.

10       (c) SELECTION PROCESS.—

11           (1) APPLICATIONS.—An institution of higher  
12           education seeking a grant under this section shall  
13           submit an application to the Director at such time,  
14           in such manner, and containing such information as  
15           the Director may require. The application shall in-  
16           clude, at a minimum—

17                   (A) a description of the proposed reform  
18                   effort;

19                   (B) a description of the previously imple-  
20                   mented reform effort that will serve as the basis  
21                   for the proposed reform effort and evidence of  
22                   success of that previous effort, including data  
23                   on student recruitment, persistence to degree  
24                   completion, and academic performance;

1 (C) evidence of active participation in the  
2 proposed project by individuals who were cen-  
3 tral to the success of the previously imple-  
4 mented reform effort; and

5 (D) evidence of institutional support for,  
6 and commitment to, the proposed reform effort,  
7 including a description of existing or planned  
8 institutional policies and practices regarding  
9 faculty hiring, promotion, tenure, and teaching  
10 assignment that reward faculty contributions to  
11 undergraduate education equal to, or greater  
12 than, scholarly scientific research.

13 (2) REVIEW OF APPLICATIONS.—In evaluating  
14 applications submitted under paragraph (1), the Di-  
15 rector shall consider at a minimum—

16 (A) the evidence of past success in imple-  
17 menting undergraduate education reform and  
18 the likelihood of success in undertaking the pro-  
19 posed expanded effort;

20 (B) the extent to which the faculty, staff,  
21 and administrators are committed to making  
22 the proposed institutional reform a priority of  
23 the participating academic unit;

24 (C) the degree to which the proposed re-  
25 form will contribute to change in institutional

1 culture and policy such that a greater value is  
2 placed on faculty engagement in undergraduate  
3 education and that a commensurate reward  
4 structure is implemented to recognize faculty  
5 for their scholarly work in this area; and

6 (D) the likelihood that the institution will  
7 sustain or expand the reform beyond the period  
8 of the grant.

9 (3) GRANT DISTRIBUTION.—The Director shall  
10 ensure, to the extent practicable, that grants award-  
11 ed under this section are made to a variety of types  
12 of institutions of higher education.

13 (d) AUTHORIZATION OF APPROPRIATIONS.—There  
14 are authorized to be appropriated to the National Science  
15 Foundation to carry out this section \$15,000,000 for each  
16 of fiscal years 2003 through 2007.

17 **SEC. 6. FACULTY DEVELOPMENT.**

18 (a) IN GENERAL.—The Director shall award grants,  
19 on a merit-reviewed, competitive basis, to—

20 (1) institutions of higher education;

21 (2) eligible nonprofit organizations; or

22 (3) consortia of institutions and organizations  
23 described in paragraphs (1) and (2),

1 for professional development of undergraduate faculty in  
2 support of improved undergraduate science, mathematics,  
3 engineering, and technology education.

4 (b) USES OF FUNDS.—Activities supported by grants  
5 under this section may include—

6 (1) support for individuals to participate in  
7 scholarly activities aimed at improving under-  
8 graduate science, mathematics, engineering, and  
9 technology education including—

10 (A) sabbatical funding, including partial or  
11 full support for salary, benefits, and supplies,  
12 for faculty participating in scholarly research  
13 in—

14 (i) science, mathematics, engineering,  
15 or technology;

16 (ii) the science of learning; or

17 (iii) assessment and evaluation related  
18 to undergraduate instruction and student  
19 performance;

20 (B) stipend support for graduate students  
21 and post-doctoral fellows to participate in in-  
22 structional or evaluative activities at primarily  
23 undergraduate institutions; and

24 (C) release time from teaching for faculty  
25 engaged in the development, implementation,

1           and assessment of undergraduate science,  
2           mathematics, engineering, and technology edu-  
3           cation reform activities following participation  
4           in a sabbatical opportunity or faculty develop-  
5           ment program described in this subsection; and  
6           (2) support for institutions to develop, imple-  
7           ment, and assess faculty development programs fo-  
8           cused on improved instruction, mentoring, evalua-  
9           tion, and support of undergraduate science, mathe-  
10          matics, engineering, and technology students, includ-  
11          ing costs associated with—

12                   (A) stipend support or release time for fac-  
13                   ulty and staff engaged in the development, de-  
14                   livery, and assessment of the faculty develop-  
15                   ment program;

16                   (B) stipend support or release time for fac-  
17                   ulty, graduate students, or post-doctoral fellows  
18                   from the host institution or external institutions  
19                   who are engaged as participants in such faculty  
20                   development programs; and

21                   (C) support for materials, supplies, travel  
22                   expenses, and consulting fees associated with  
23                   the development, delivery, and assessment of  
24                   such faculty development programs.

1       (c) APPLICATIONS.—An entity seeking a grant under  
2 this section shall submit an application to the Director at  
3 such time, in such manner, and containing such informa-  
4 tion as the Director may require. The application shall in-  
5 clude, at a minimum—

6           (1) a description of the activities to be carried  
7 out under the proposed project and the projected im-  
8 pact of the project on undergraduate majors and  
9 nonmajors enrolled in science, mathematics, engi-  
10 neering, or technology courses or programs;

11          (2) a plan for assessment of the outcomes of  
12 the proposed project;

13          (3) a plan for dissemination of information re-  
14 garding the activities and outcomes of the proposed  
15 project; and

16          (4) evidence of institutional support for imple-  
17 mentation of the proposed project, including commit-  
18 ment to appropriate faculty sabbaticals and release  
19 time from teaching.

20       (d) ANNUAL MEETING.—The Director shall convene  
21 an annual meeting of awardees under this section to foster  
22 greater national information dissemination and collabora-  
23 tion in the area of undergraduate science, mathematics,  
24 engineering, and technology education.

1 (e) AUTHORIZATION OF APPROPRIATIONS.—There  
2 are to be authorized to be appropriated to the National  
3 Science Foundation to carry out this section \$8,000,000  
4 for each of fiscal years 2003 through 2007.

5 **SEC. 7. ACCESS TO RESEARCH-GRADE INSTRUMENTATION.**

6 (a) IN GENERAL.—The Director shall award grants,  
7 on a merit-reviewed, competitive basis, to institutions of  
8 higher education to support the acquisition of research-  
9 grade instrumentation and to support training related to  
10 the use of that instrumentation. Instruments provided  
11 through awards under this section shall be used primarily  
12 for undergraduate research, undergraduate instruction, or  
13 both, in science, mathematics, engineering, or technology.

14 (b) ELIGIBLE INSTITUTIONS.—Grants may be  
15 awarded under this section only to institutions of higher  
16 education that award fewer than 10 doctoral degrees per  
17 years in disciplines for which the National Science Foun-  
18 dation provides research support.

19 (c) AUTHORIZATION OF APPROPRIATIONS.—There  
20 are to be authorized to be appropriated to the National  
21 Science Foundation to carry out this section \$10,000,000  
22 for each of fiscal years 2003 through 2007.

23 **SEC. 8. UNDERGRADUATE RESEARCH EXPERIENCES.**

24 (a) IN GENERAL.—The Director shall award grants,  
25 on a merit-reviewed, competitive basis, to institutions of

1 higher education to establish sites that provide research  
2 experiences for 10 or more undergraduate science, mathe-  
3 matics, engineering, or technology students. The Director  
4 shall ensure that—

5 (1) at least half of the students participating at  
6 each site funded under this section shall be recruited  
7 from institutions of higher education where research  
8 activities in science, mathematics, engineering, or  
9 technology are limited or nonexistent;

10 (2) the awards provide undergraduate research  
11 experiences in a wide range of science, mathematics,  
12 engineering, or technology disciplines;

13 (3) awards support a variety of projects includ-  
14 ing independent investigator-led projects, multidisci-  
15 plinary projects, and multiinstitutional projects (in-  
16 cluding virtual projects);

17 (4) students participating in the projects have  
18 mentors, including during the academic year, to help  
19 connect the students' research experiences to the  
20 overall academic course of study and to help stu-  
21 dents achieve success in courses of study leading to  
22 a baccalaureate degree in science, mathematics, en-  
23 gineering, or technology;

24 (5) mentors and students are supported with  
25 appropriate summer salary or stipends; and



1 (6) all student participants are tracked through  
2 receipt of the undergraduate degree and for at least  
3 1 year thereafter.

4 (b) AUTHORIZATION OF APPROPRIATIONS.—There  
5 are authorized to be appropriated to the National Science  
6 Foundation to carry out this section \$10,000,000 for each  
7 of fiscal years 2003 through 2007.

8 **SEC. 9. DISSEMINATION OF PROJECT INFORMATION.**

9 The Director shall ensure that all National Science  
10 Foundation-sponsored undergraduate science, mathe-  
11 matics, engineering, or technology education projects, in-  
12 cluding those sponsored by National Science Foundation  
13 research directorates, shall disseminate via the Internet,  
14 at a minimum, the following information:

15 (1) Scope, goals, and objectives of each project.

16 (2) Activities, methodologies, and practices de-  
17 veloped and implemented.

18 (3) Outcomes, both positive and negative, of  
19 project assessment activities.

20 **SEC. 10. EVALUATION.**

21 (a) IN GENERAL.—The Director, through the Re-  
22 search, Evaluation and Communication Division of the  
23 Education and Human Resources Directorate of the Na-  
24 tional Science Foundation, shall evaluate the effectiveness  
25 of all undergraduate science, mathematics, engineering, or

1 technology education activities supported by the National  
2 Science Foundation in increasing the number and quality  
3 of students studying and receiving associate or bacca-  
4 laureate degrees in science, mathematics, engineering, and  
5 technology. In conducting the evaluation, the Director  
6 shall consider information on—

7 (1) the number of students enrolled;

8 (2) student academic performance, including  
9 quantifiable measurements of students' mastery of  
10 content and skills;

11 (3) persistence to degree completion, including  
12 students who transfer from science, mathematics,  
13 engineering, and technology programs to programs  
14 in other academic disciplines; and

15 (4) placement during the first year after degree  
16 completion in post-graduate education or career  
17 pathways.

18 (b) ASSESSMENT BENCHMARKS AND TOOLS.—The  
19 Director, through the Research, Evaluation and Commu-  
20 nication Division of the Education and Human Resources  
21 Directorate of the National Science Foundation, shall es-  
22 tablish a common set of assessment benchmarks and tools,  
23 and shall enable every National Science Foundation-spon-  
24 sored project to incorporate the use of these benchmarks  
25 and tools in their project-based assessment activities.

1 (c) DISSEMINATION OF EVALUATION RESULTS.—

2 The results of the evaluations required under subsection

3 (a) shall be made available to the public.

4 (d) REPORTS TO CONGRESS.—Not later than 3 years

5 after the date of the enactment of this Act, and once every

6 3 years thereafter, the Director shall transmit to the Con-

7 gress a report containing the results of evaluations under

8 subsection (a).

9 **SEC. 11. NATIONAL ACADEMY OF SCIENCES STUDY ON UN-**

10 **DERGRADUATE RECRUITMENT AND RETEN-**

11 **TION.**

12 (a) STUDY.—Not later than 3 months after the date

13 of the enactment of this Act, the Director shall enter into

14 an arrangement with the National Research Council of the

15 National Academy of Sciences to perform a study on the

16 factors that influence undergraduate students to enter and

17 persist to degree completion in science, mathematics, engi-

18 neering, and technology programs or to leave such pro-

19 grams and matriculate to other academic programs, as re-

20 ported by students.

21 (b) TRANSMITTAL TO CONGRESS.—Not later than 18

22 months after the date of the enactment of this Act, the

23 Director shall transmit to the Congress a report con-

24 taining the results of the study under subsection (a).

1       (c) AUTHORIZATION OF APPROPRIATION.—There are  
2 authorized to be appropriated to the National Science  
3 Foundation for carrying out this section \$700,000 for fis-  
4 cal year 2003, to remain available until expended.